



Contribution ID: 1396

Type: **Poster Presentation**

Tue-Af-Po2.21-08 [71]: Considering axial phenomenon, axial permanent magnet segment motor Analysis.

Tuesday 24 September 2019 14:00 (2 hours)

As increasing of rare earth permanent magnet motor usage, IPMSM (Interior Permanent Magnet Synchronous Motor) is used in many industrial region. As used in many industrial region, researches on increasing power, efficiency and stiffness are under way. Most of these researches are interpreted as 2D model. If interpreted in 2D model, phenomena which occur on axial direction are not considered. One of axial direction phenomena is fringing effect. Fringing effect is related to magnetic flux interlinkage. Magnetic flux interlinkage is related to torque of IPMSM.

This paper uses axial permanent magnet segment structure IPMSM. Axial permanent magnet segment causes fringing effect in the middle of stacking length. Fringing effect in the middle of stacking length causes exchange leakage flux to magnetic flux interlinkage. Magnetic flux linkage is proportional to torque and power of IPMSM. Flux linkage is proportional to loss. As exchange leakage flux to magnetic flux, torque and power of IPMSM increase and loss of IPMSM reduce.

To calculate magnetic flux linkage and leakage flux value, magnetic equivalent circuit is used in this paper. To confirm accuracy of calculate value, preparing no-load EMF. After calculating and confirm the volume which is caused by fringing effect, it is possible to increase accuracy of axial permanent magnet segment analysis on 2D model.

Author: LEE, Gang Seok (Hanyang Univ)

Co-authors: JANG, Hyungkwan (Hanyang University); LEE, Seungheon; LEE, Ju (Hanyang University)

Presenters: JANG, Hyungkwan (Hanyang University); LEE, Seungheon

Session Classification: Tue-Af-Po2.21 - Motors VIII